REMARKS

Favorable reconsideration of the application is respectfully requested in light of the amendments and remarks herein.

Upon entry of this amendment, claims 1–21 will be pending. By this amendment, claims 1, 3-5, 7-8, 10-11,13-14, 16, and 18–20 have been amended; and claim 21 has been added. No new matter has been added.

§102 Rejection of Claims 1–3, 5–6, 8–13, 15 and 17–20

On page 3 of the Final Office Action of June 6, 2005 (hereinafter referred to as "the Office Action"), claims 1–3, 5–6, 8–13, 15 and 17–20 stand rejected under 35 U.S.C. §102(e) as being anticipated by Kraft *et al.* (U.S. Patent No. 6,225,546; hereinafter referred to as "Kraft").

In the Background of the Specification, it was indicated that "[o]ne of the challenges in creating music collages on computer systems is that music is recorded in a wide range of different tempos. Understandably, music that is recorded at one tempo does not sound good when mixed with music recorded at another. Thus, knowing the tempo and downbeat is important in the creation and editing of music. Nevertheless, music recordings on compact discs (CD), tapes, or other media, generally do not include information on tempo in the recorded signal. It is, therefore, difficult (if not impossible) to properly mix musical media with other musical recordings without having tempo information. Thus, there is a need for a system for and a method of determining the period of recurring events within a recorded signal. Further, there is a need to precisely identify tempo of a recorded signal so that multiple recorded signals can be successfully mixed together. Even further, there is a need to synchronize musical loops and other musical media to any song and to other time based events such as video, animation, lights,

or other timing critical devices." *Background of the Specification, page 2, lines 5–19.* (emphasis added)

To solve the above-described problems as to mixing multiple recorded signals and synchronizing musical loops and other musical data to a song, embodiments of the present invention include methods and systems for precisely identifying tempo in a recorded signal by determining a period of recurring events.

For example, the method of claim 1, as presented herein, includes at least:

> *determining a period of recurring events within a recorded signal*, the period of recurring events providing a measurement of a tempo of the recorded signal, said determining comprising:
>
> *establishing an anchor point* in the recorded signal, the anchor point being indicative of a beginning point for a period of recurring events in the recorded signal;
>
> *determining a length for the period* of recurring events in the recorded signal, the length starting from the established anchor point and defining a first loop; and
>
> *refining the length for the period* of recurring events by comparing the first loop with subsequent loops, the subsequent loops having the length of the first loop.

(emphasis added)

Accordingly, in one aspect of claim 1, the method is characterized by determining a period of recurring events within a recorded signal, the period of recurring events providing a measurement of a tempo of the recorded signal, the determination comprising: establishing an anchor point in the recorded signal; determining a length for the period of recurring events in the recorded signal; and refining the length for the period of recurring events.

By contrast, Kraft is concerned not with determining a period of recurring events within a recorded signal, but rather with determining the musical structural components within a musical

composition for the purpose of creating a brief musical summary. "This invention discloses a summarization system for musical compositions [where] the summarization data is ... used to create an audio segment (thumbnail) which is useful in recognition of the musical piece." *Kraft, Col. 2, lines 14–20.* To this end, Kraft relies primarily upon the recognizability of the melody of the composition, a structural component, which it endeavors to determine, NOT the period of the recurring event, as in this case. "A key aspect of the invention is to use the structure information of the music piece to determine the main melody and use [it] as the representative audio summary." *Kraft, Col. 2, lines 20–24.* (emphasis added)

To determine the melody, Kraft assumes that a melody is a repeated pattern in most musical compositions, and further that variations may be present in any such repetitions. "A piece of music consists of a sequence of parts. The main melody ... often repeats itself in the composition." *Kraft, Col. 7, lines 40–42.* "Each repetition of the main melody comes usually with variations." *Kraft, Col. 7, lines 53–54.* Kraft admits that variations in a melody make the melody more difficult to determine. For example, "a jazz composition usually comprises the improvisation of the musicians, producing variation in most of the parts and creating problems in determining the main melody part." *Kraft, Col. 7, lines 64–67.* Kraft then describes a method of ameliorating the effects of variations in repeated instances of a melody by "utiliz[ing] beat and notes components to detect variations on the primitive components, e.g., the notes." *Kraft, Col. 8, lines 1–3.*

Kraft thereby attempts to determine a structural part of a composition, a main melody, by matching primitive musical components of assumed repetitions of the melody, but must account for variations in the primitives lest the matching of the primitive components fails, consequently causing the determination of the melody to fail. Kraft thus focuses on structural parts of a

composition and primitive musical components.

The Office Action states, "[i]t is inherent that not all musical pieces have a steady tempo throughout, whether the original recording artist intends this feature or not. It is inherent that the teachings of Kraft require a determination and refining of a length of a loop." *Office Action, page 3, lines 14–17.* Applicant respectfully disagrees with this statement and maintains that Kraft teaches not of refining the length for the period of a recurring event in a recorded signal, but teaches instead of detecting variations in primitive musical components in a musical composition, such as beats and notes.

Additionally, the Advisory Action of August 25, 2005 (hereinafter referred to as "the Advisory Action"), stated, "Kraft refines the length of subsequent melodies in allowing for variations of duration (Col. 11, line 65 – Col. 12, line 15)." *Advisory Action, page 3, lines 6–7.* Applicant respectfully disagrees with this interpretation. As stated in the referenced citation, "[t]he melody and other parts could repeat with elongation [where] its duration is uniformly elongated or uniformly shortened. To incorporate it into a finite string representation, consider 'aabbccddeeffgg' as an elongation of 'abcdefg' with a factor of 2." *Kraft, Col. 11, line 65 to Col. 12, line 2.* Kraft thus teaches that an "elongation" (i.e., "duration"), is related to the presence of additional structural components (*e.g.*, "a," "b," etc.) of a musical composition in an assumed repetition of the main melody, and therefore does not teach or suggest refining the length for the period of a recurring event in a recorded signal. Moreover, Kraft also fails to teach or suggest determining a period of recurring events within a recorded signal, the period of recurring events providing a measurement of a tempo of the recorded signal. Kraft therefore fails to teach or suggest all of the limitations of claim 1.

In summary, the embodiments of the present invention are configured to solve problems

in mixing multiple recorded signals and synchronizing musical loops and other musical data to a song by determining a period of the recorded signal and refining the length of the period whereas Kraft merely attempts to determine the melody of the composition (i.e., a structural component).

Based on the foregoing discussion, claim 1 should be allowable over Kraft. Since claims 11 and 18, as amended herein, closely parallel, and recite substantially similar limitations as recited in, claim 1, claims 11 and 18 should also be allowable over Kraft. Further, since claims 2–3, 5–6, 8–10, 12–13, 15, 17, and 19–20 depend from one of claims 1, 11 and 18, claims 2–3, 5–6, 8–10, 12–13, 15, 17, and 19–20 should also be allowable over Kraft.

Accordingly, it is submitted that the rejection of claims 1–3, 5–6, 8–13, 15 and 17–20 based upon 35 U.S.C. §103(a) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

§103 Rejection of Claims 4, 7 and 14

On page 6 of the Office Action, claims 4, 7 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kraft.

Based on the foregoing discussion regarding independent claims 1 and 11, and since claims 4, 7 and 14 depend respectively from one of claims 1 and 11, claims 4, 7 and 14 should also be allowable over Kraft.

Accordingly, it is submitted that the rejection of claims 4, 7 and 14 based upon 35 U.S.C. §103(a) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

Amended Claims 19–20

Claims 19–20 have been amended to depend from independent claim 18 instead of dependent claim 17. No new matter has been added.

New Claim 21

New independent claim 21 is added and is patentable over *Kraft* for at least the same reasons as those given above. Support for claim 21 is found, e.g., in Figures 2-7 and their associated text.

Conclusion

In view of the foregoing, entry of this amendment, and the allowance of this application with claims 1–21 are respectfully solicited.

In regard to the claims amended herein and throughout the prosecution of this application, it is submitted that these claims, as originally presented, are patentably distinct over the prior art of record, and that these claims were in full compliance with the requirements of 35 U.S.C. §112. Changes that have been made to these claims were not made for the purpose of patentability within the meaning of 35 U.S.C. §§101, 102, 103 or 112. Rather, these changes were made simply for clarification and to round out the scope of protection to which Applicant is entitled.

In the event that additional cooperation in this case may be helpful to complete its prosecution, the Examiner is cordially invited to contact Applicant's representative at the telephone number written below.

The Commissioner is hereby authorized to charge any insufficient fees or credit any overpayment associated with the above-identified application to Deposit Account 50-0320.

Respectfully submitted,

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